

# QYI454G

## THREE-PHASE SYNCHRONOUS GENERATOR WINDING QY12 Datasheet for 4 poles -50Hz @ 1500rpm/ 60Hz @ 1800rpm

Ambient Temperature 环境温度	40 °C	Method of Cooling 冷却方式	Air cooling 风冷
Temperature Rise 温升	125 °C	Direction of Rotation 旋转方向	Clockwise 顺时针
Insulation Class 绝缘等级	H	Maximum Over-speed 最高转速	2250r/min
Power Factor 功率因数	0.8	Degree of Protection / Enclosure 防护等级	IP23
Excitation 励磁方式	Brushless 无刷	Altitude 海拔	1000m
Winding Pitch 绕组节距	2/3	Stator winding 定子绕组	双层叠绕绕组 DLL
Pole 极数	4	Number of Terminal 终端数量	6
Duty 工作制	S1- Continuous	Rotor 转子	With damping cage 带阻尼
Waveform 电话干扰因数	TIF<50		THF<2%
Waveform distortion 波形畸变率	BS EN 61000-6-2&BS EN 61000-6-4,VDE 0875G,VDE0874N		
Radio interference 无线电干扰	Noload<1.5%,Non-distorting balanced linear load<5%		
AVR MODEL AVR型号	Standard 标配	Selection 选配	
	MX341B	MX321	PMG MX341B MX321
Voltage Regulation - in steady state condition 电压调节	±0.5	±0.5	±0.5 ±0.5
Short Circuit Current Capacity 短路电流容量	8150A		

Electrical Characteristic									
Frequency 频率	Hz	50				60			
		Voltage ( series star )电压 Y	V	380/220	400/231	415/240	440/254	416/240	440/254
Voltage ( parallel star )电压 YY	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Voltage ( series delta )电压 Δ	V	220	230	240	254	240	254	266	277
Rated power at Class H (125 °C) temperature rise 额定功率在H(125 °C)温升	kVA	2135	2200	2200	2160	2420	2535	2625	2750
	kW	1708	1760	1760	1728	1936	2028	2100	2200
Efficiency at Class H (P.F.=0.8)绝缘等级H (P.F.=0.8)效率	4/4%	96.0	96	96.1	96.3	95.9	96	96	96.1
	3/4%	96.4	96.4	96.5	96.5	96.3	96.3	96.3	96.4
	2/4%	96.4	96.4	96.4	96.3	96.1	96.2	96.2	96.2
Efficiency at Class H (P.F.=1.0)绝缘等级H (P.F.=1.0)效率	4/4%	96.9	97	97	97.1	96.8	96.9	96.9	97
	3/4%	97.3	97.3	97.3	97.4	97.1	97.1	97.2	97.2
	2/4%	97.2	97.2	97.2	97.2	97	97	97	97.1

Reactances (%) at Class H 绝缘等级H考核时的电抗									
Direct axis synchronous reactance unsaturated 直轴同步电抗	X <sub>d</sub>	3.71	3.45	3.2	2.8	4.38	4.1	3.89	3.74
Direct axis transient reactance saturated 直轴瞬态电抗	X' <sub>d</sub>	0.21	0.19	0.18	0.15	0.24	0.23	0.22	0.21
Direct axis subtransient reactance saturated 直轴瞬变电抗	X'' <sub>d</sub>	0.15	0.14	0.13	0.11	0.17	0.16	0.15	0.15
Quadrature axis synchronous reactance unsaturated 交轴同步电抗	X <sub>q</sub>	2.38	2.22	2.06	1.8	2.82	2.64	2.5	2.41
Quadrature axis subtransient reactance saturated 交轴起始瞬态电抗	X' <sub>q</sub>	0.28	0.26	0.24	0.21	0.33	0.31	0.3	0.28
Leakage reactance 漏抗	X <sub>l</sub>	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Negative sequence reactance saturated 负序电抗饱和	X <sub>2</sub>	0.2	0.19	0.18	0.15	0.24	0.22	0.21	0.21
Zero sequence reactance unsaturated 零序电抗不饱和	X <sub>0</sub>	0.04	0.04	0.03	0.03	0.04	0.04	0.04	0.04
Short-circuit ratio 短路比	K <sub>cc</sub>	0.2695	0.2899	0.3125	0.3571	0.2283	0.2439	0.2571	0.2674

Short-circuit transient time constant (sec.) 瞬变时间常数 (秒)	T' <sub>d</sub>	0.16							
Subtransient time constant (sec.) 超瞬变时间常数 (秒。)	T'' <sub>d</sub>	0.01							
Open circuit time constant (sec.) 开路时间常数	T' <sub>do</sub>	2.89							
Armature time constant (sec.) 电枢时间常数	T <sub>a</sub>	0.02							
Stator Winding Resistance (20°C) 定子绕组电阻(20°C)	ohm	0.00075							
Rotor Winding Resistance (20°C) 转子绕组电阻(20°C)	ohm	1.82							
Exciter Stator Resistance (20°C) 励磁机定子电阻(20°C)	ohm	20							
Exciter Rotor Phase resistance 励磁机转子相电阻	ohm	0.06							
No load excitation current 空载励磁电流	io (A)	0.6	0.63	0.71	0.65	0.56	0.6	0.62	0.63
Full load excitation current 满载励磁电流	ic(A)	3.2	3.2	3.6	3.2	3.4	3.3	3.4	3.5
Cooling air requirement 空气冷却要求	m <sup>3</sup> /sec	2.69m <sup>3</sup> /s 5200cfm				3.45m <sup>3</sup> /s 7300cfm			

Mechanical Characteristic		
Configuration 结构	Single Bearing 单轴承	Double Bearing 双轴承
Type of Construction 结构形式	B2-SAE	IM B34
Total Weight - kgs 总重量-公斤	4054	4022
Weight wound stator - kgs 定子重量-公斤	2015	2015
Weight wound rotor - kgs 转子重量-公斤	1697	1654
Inertia (J) [kgm <sup>2</sup> ] 转动惯量 (J) [kgm <sup>2</sup> ]	52.2511kgm <sup>2</sup>	51.3341kgm <sup>2</sup>
Drive end bearing / Lubrication 驱动端轴承/润滑		BALL.6228-2RS(ISO)
Non-drive end bearing / Lubrication 非驱动端轴承/润滑	BALL.6319-2RS(ISO)	BALL.6319-2RS(ISO)
Packing crate size 包装尺寸 (cm)	220X101X159	230X101X159

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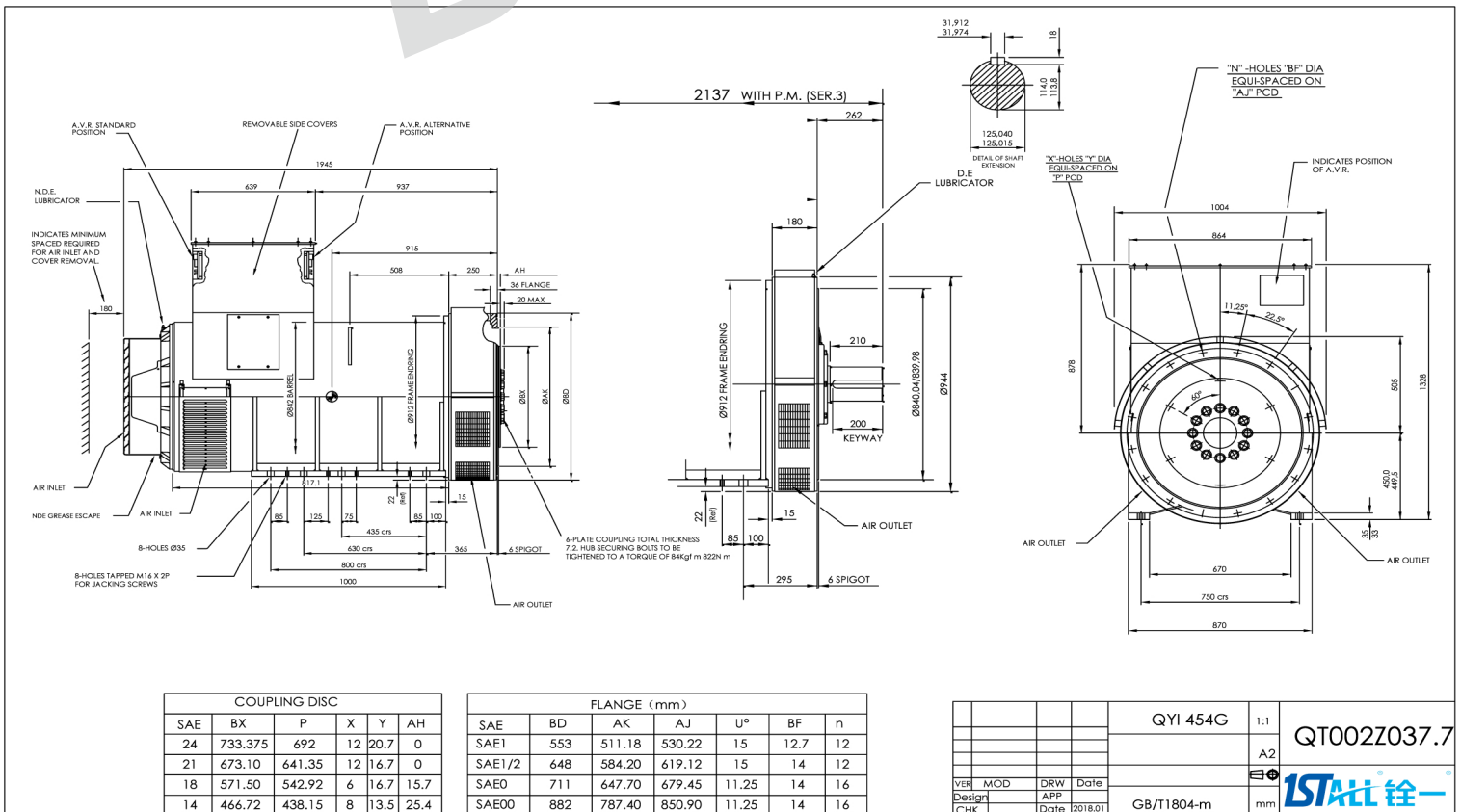
## Winding 312 / 0.8 Power Factor

### RATINGS

Class - Temp Rise		Cont. F - 105/40°C				Cont. H - 125/40°C				Standby - 150/40°C				Standby - 163/27°C			
<b>50Hz</b>	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	kVA	1985	2050	2050	2005	2135	2200	2200	2160	2225	2295	2295	2250	2290	2360	2360	2310
	kW	1588	1640	1640	1604	1708	1760	1760	1728	1780	1836	1836	1800	1832	1888	1888	1848
	Efficiency (%)	96.1	96.2	96.3	96.4	96.0	96.0	96.1	96.3	95.9	95.9	96.0	96.2	95.8	95.9	96.0	96.1
	kW Input	1652	1705	1703	1664	1779	1833	1831	1794	1856	1914	1913	1871	1912	1969	1967	1923

<b>60Hz</b>	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	kVA	2255	2360	2445	2560	2420	2535	2625	2750	2515	2635	2725	2860	2590	2715	2810	2945
	kW	1804	1888	1956	2048	1936	2028	2100	2200	2012	2108	2180	2288	2072	2172	2248	2356
	Efficiency (%)	96.0	96.1	96.2	96.2	95.9	96.0	96.1	96.1	95.8	95.9	96.0	96.0	95.8	95.9	95.9	95.9
	kW Input	1879	1965	2033	2129	2019	2113	2185	2289	2100	2198	2271	2383	2163	2265	2344	2457

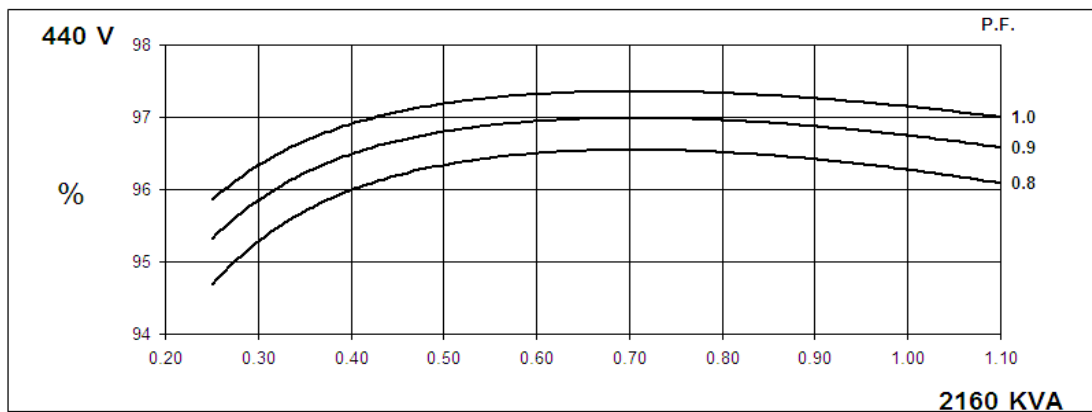
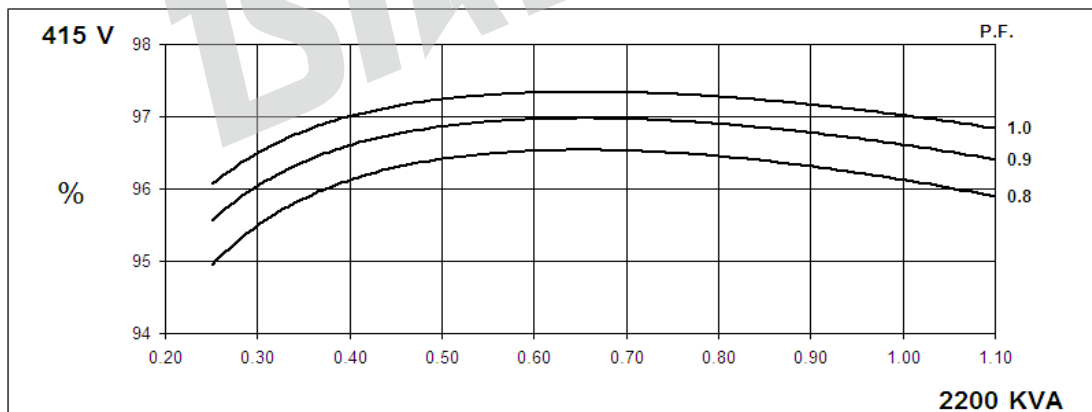
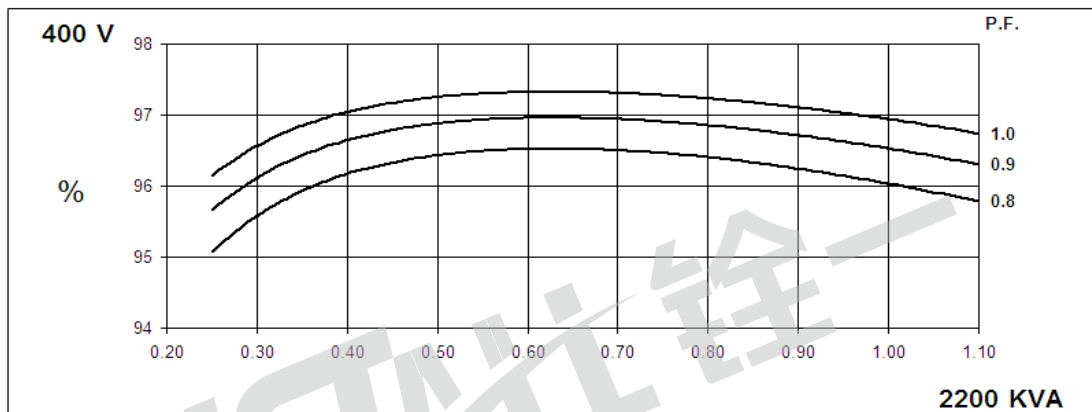
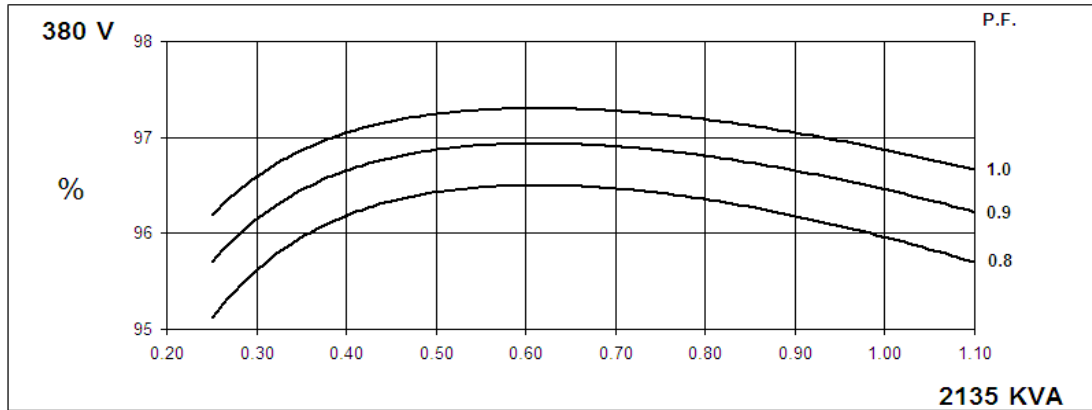
### DIMENSIONS



50  
Hz

QYI454G  
Winding 312

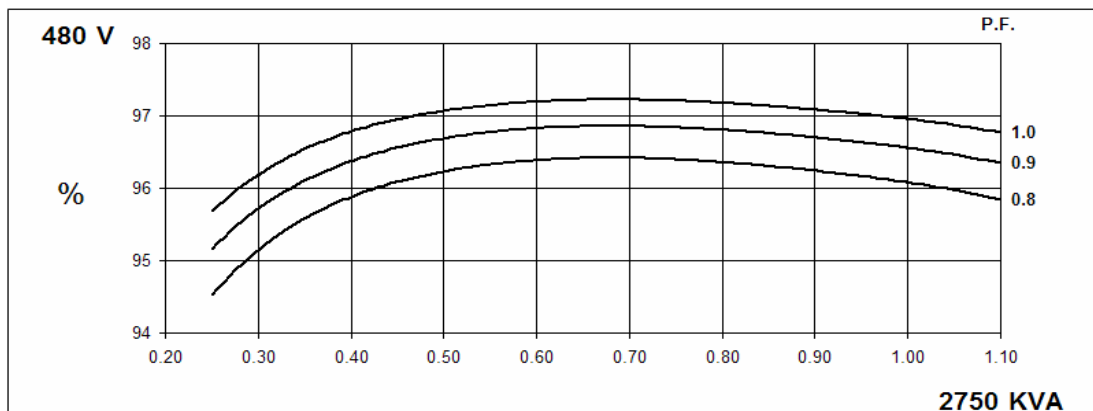
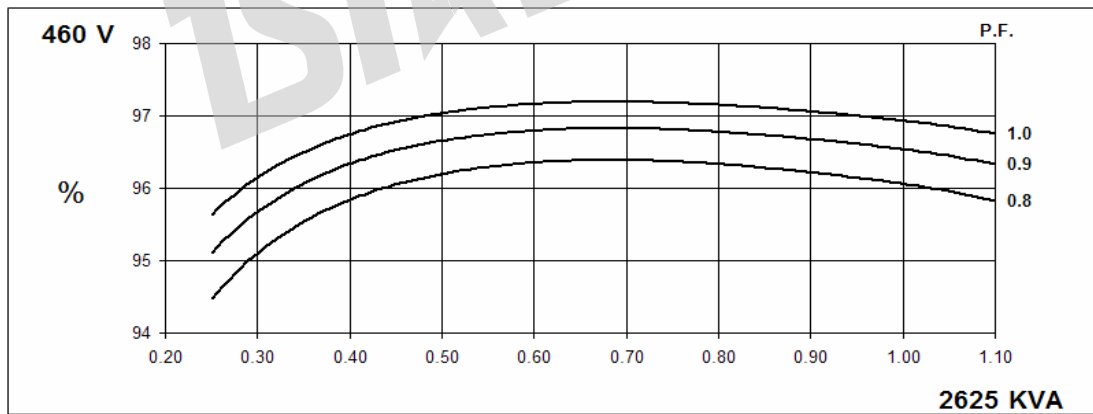
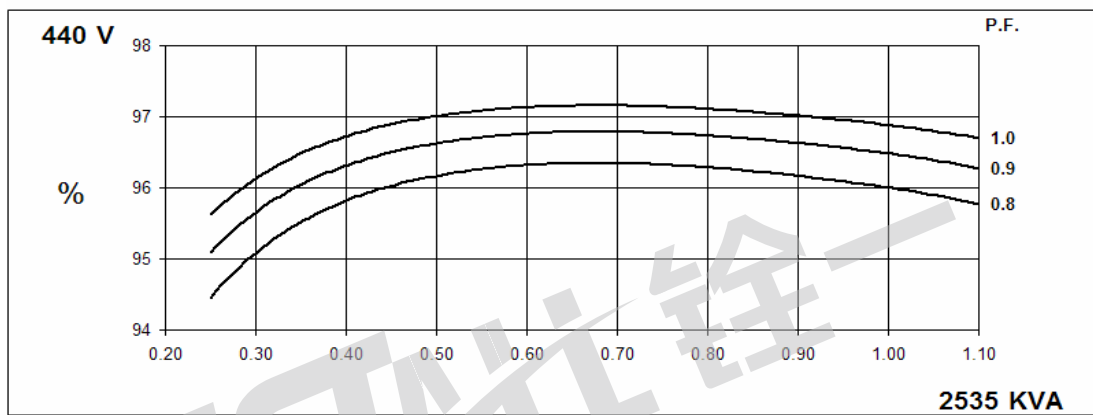
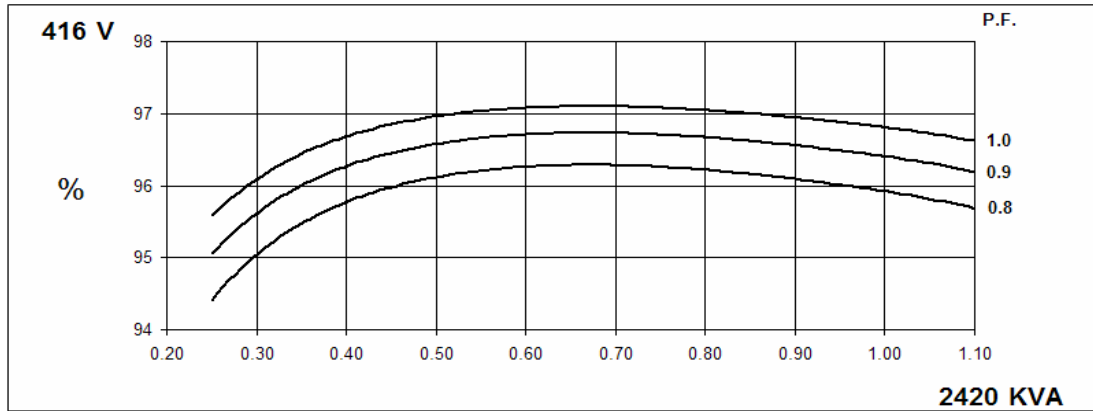
THREE PHASE EFFICIENCY CURVES



60  
Hz

QYI454G  
Winding 312

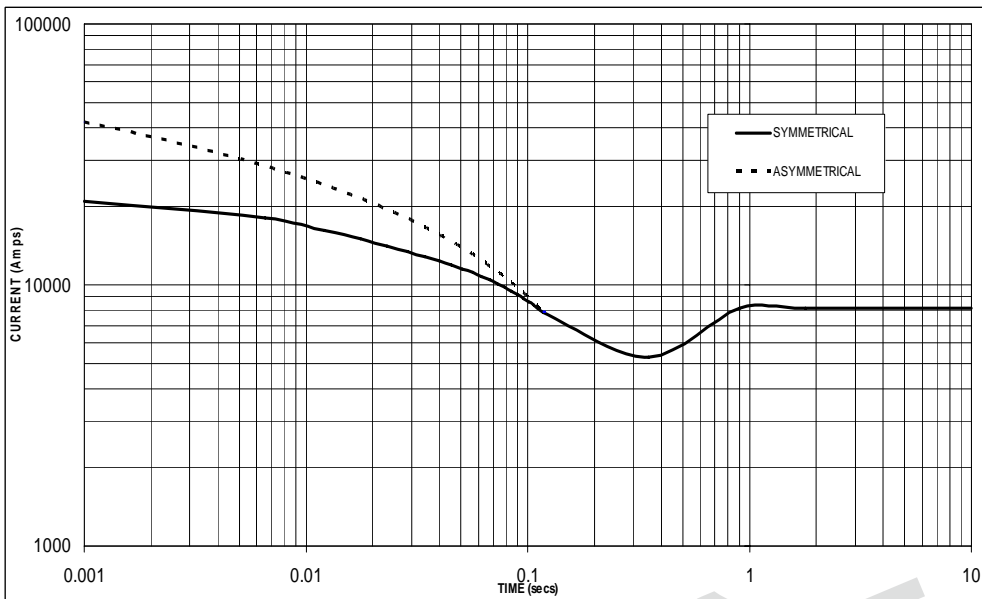
THREE PHASE EFFICIENCY CURVES



# QYI454G

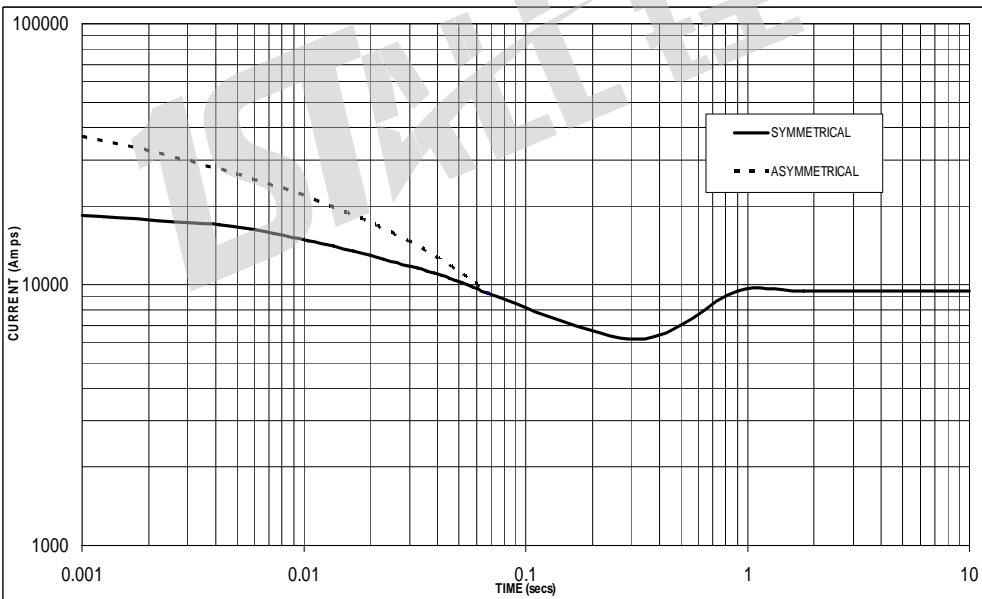
## Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

50  
Hz



Sustained Short Circuit = 8,150 Amps

60  
Hz



Sustained Short Circuit = 9,500 Amps

### Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380v	x 1.00	416v	x 1.00
400v	x 1.05	440v	x 1.06
415v	x 1.09	460v	x 1.10
440v	x 1.16	480v	x 1.15

The sustained current value is constant irrespective of voltage level

### Note 2

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

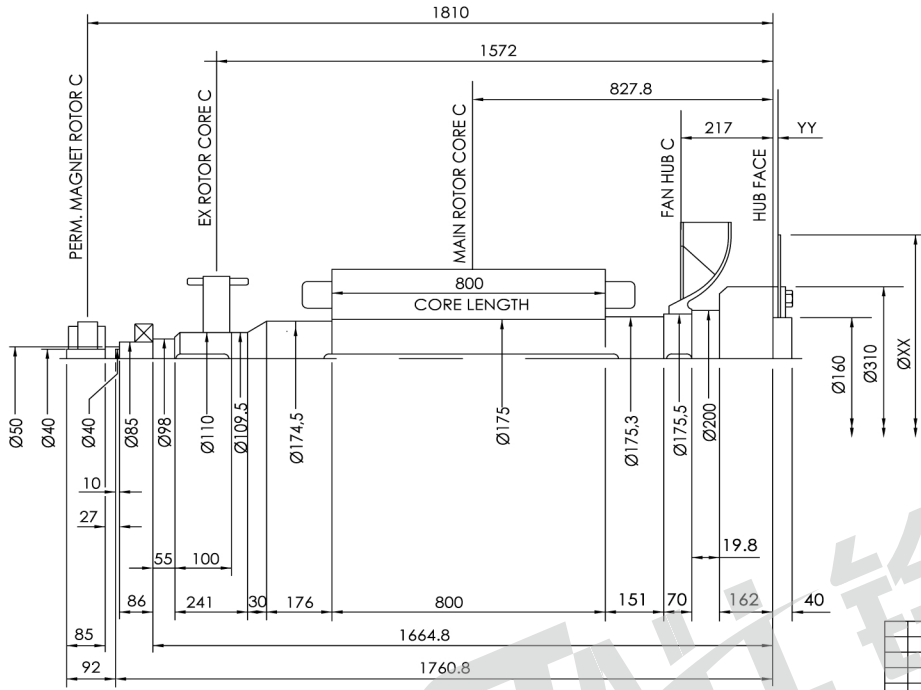
### Note 3

Curves are drawn for Star (Wye) connected machines.

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## Winding 311

### INERTIA



COMPONENT	Wt kg	J kgm <sup>2</sup>
EX. ROTOR	51.6	0,859
MAIN ROTOR	1195.289	46.423
FAN	28.8	1.652
SHAFT	318.125	1.1979
HUB	53.533	0,8846
P.M.EX.ROTOR	6.97	0.019
P.M. STUB SHAFT	0.929	0,0003
<b>TOTAL</b>	<b>1650.437</b>	<b>50.9527</b>

COUPLING SAE No	COUPLING DIMEN's		COUPLING ASSEMBLY WEIGHT kg	COUPLING DISC J kgm <sup>2</sup>
	XX	YY		
18	572	16	24.5	0,59
21	673	0	23.1	1.135
24	733	0	26.84	1.598

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INERTIA					
VER	MOD	DRW	Date		
Design		APP			
CHK		Date	2018.01		